

LOS ALAMOS ENVIRONMENTAL RESTORATION PROGRAM INTERIM CHANGE NOTICE

EFFECTIVE DATE : (Dist. Date) 2/14/95 ICN No. 006 Page 1 of 1

Document No. 3.01 Rev. 1 Title: Land Surveying Procedures

Reason for Change:

Point of clarification:

Under New Mexico Engineering and Surveying Practice Act, Licensed Professional Engineers or other surveyors with comparable qualifications and demonstrated experience and can perform design, construction, or topographic surveys including photogrammetric methods. Only licensed, Professional Land Surveyors are authorized to perform control, property, easement, or boundary surveys.

Description of Change (Specify page, paragraph, and/or section revised, and clearly write new text to be incorporated in the document).

1) Page 2, Section 2.2, in second line after "Program",

add: control, boundary, property, or easement;

end fourth line after "New Mexico", and

delete: "except when the Field Project Leader or designee is willing to document and accept responsibility for the deviation in accordance with 6.0 (100.4) of this SOP."

2) Page 5, first line, delete: "The Field Project Leader or designee will then accept any liability resulting from not using licensed surveyor."

3) Page 7, Section 8, replace first line with:

It is the responsibility of the Field Team Leader to submit all records generated by this SOP to the ER Records Processing Facility including:

Change Requested
by:

DAVID McINROY
(Print)

DAVID McINROY
(Signature)

1/27/95
(Date)

Functional Reviewer

Dave Bradbury
(Print)

D. Bradbury
(Signature)

1/18/95
(Date)

Program Manager
Approval:

JORG JANSEN
(Print)

JORG JANSEN
(Signature)

1-31-95
(Date)

QPPL (QA review
and approval)

Lawrence A. Sorensen
(Print)

L. A. Sorensen
(Signature)

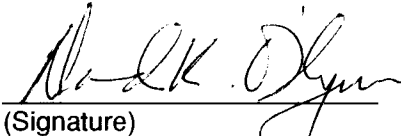
1/31/95
(Date)

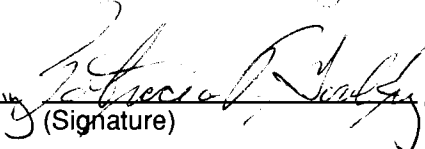
Los Alamos National Laboratory
Environmental Restoration Program
Standard Operating Procedure


No: LANL-ER-SOP-03.01

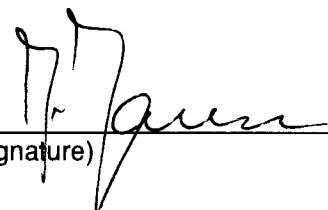
Rev: 1

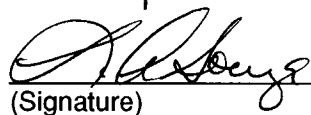
Land Surveying Procedures

Prepared by DAVID K. O'LENN  6/27/94
(Print Name) (Signature) (Date)

Quality Review by Patricia F. Goulding  6/23/94
(Print Name) (Signature) (Date)

Technical Review by ERNEST T. REIFER  6/28/94
(Print Name) (Signature) (Date)

PM Approval JORG JANSEN  9-2-94
(Print Name) (Signature) (Date)

QPPL Approval LAWRENCE A. SOUZA  9/1/94
(Print Name) (Signature) (Date)

Effective Date: 9/6/94

LAND SURVEYING PROCEDURES

Contents

1.0 PURPOSE	2
2.0 SCOPE.....	2
2.1 Applicability.....	2
2.2 Training.....	2
3.0 DEFINITIONS.....	2
4.0 BACKGROUND AND/OR CAUTIONS.....	2
5.0 EQUIPMENT	3
6.0 PROCEDURE.....	3
7.0 REFERENCES.....	7
8.0 RECORDS.....	7
9.0 ATTACHMENTS.....	7

LAND SURVEYING PROCEDURES

1.0 PURPOSE

The purpose of this Standard Operating Procedure (SOP) is to define requirements for land surveying performed for the Environmental Restoration (ER) Program. This SOP incorporates many of the same procedures contained in the Los Alamos National Laboratory (the Laboratory's) Survey Manual, as prepared by the Facilities Engineering Division (ENG). This SOP supplements and modifies those procedures.

2.0 SCOPE

2.1 Applicability

This SOP is applicable to all land surveying activities performed under the ER Program. This SOP covers all personnel who perform land surveying and mapping activities related to the ER Program.

2.2 Training

All personnel who perform land surveying must have read the Laboratory Survey Manual and this SOP. All land surveys conducted for the ER Program at the Laboratory must be performed under the direction and supervision of a professional land surveyor registered in the state of New Mexico, except when the Field Project Leader or designee is willing to document and accept responsibility for the deviation in accordance with 6.0 (100.4.C) of this SOP.

3.0 DEFINITIONS

Refer to the Laboratory Survey Manual and Section 6.0 of this SOP for definitions.

4.0 BACKGROUND AND/OR CAUTIONS

This SOP is intended to supplement and modify the procedures listed in the Laboratory Survey Manual with regard to various special requirements of the ER Program. The Laboratory Survey Manual serves two basic purposes: 1) to provide standard procedures and methods for conducting surveys and transmitting data, and 2) to provide a standard list of coordinates. Contact Mr. Larry Jones, P.E., of ENG-3 at (505) 667-0142 to obtain copies of the Laboratory Survey manual.

Because of the sensitive nature of the work, the requirement that sample locations be staked out accurately, and the ability to resurvey sample points based on survey data and field notes, only personnel with experience in land surveying and/or who are registered New Mexico professional land surveyors should use this procedure. Much of the information and direction contained herein requires professional judgment to properly apply.

5.0 EQUIPMENT

All equipment used to perform land surveying for the ER Program must be capable of measuring distances and angles, when in conjunction with established surveying practice, meet or exceed the requirements detailed in the "Minimum Standards for Land Surveying in New Mexico," revised February 2, 1994, or latest edition as published in the New Mexico Engineering and Surveying Practice Act. A copy of the standards is included in the Laboratory Survey Manual.

6.0 PROCEDURE

Below is a specific listing of each applicable procedure from the Laboratory Survey Manual, or portion thereof, and its applicability. The listings are supplemented by specific additions required by the ER Program. They are listed by procedure number and title.

100 LANL Procedures

100.1 Purpose and Scope

This is wholly applicable to land surveying under the ER Program.

100.2 Central Point

Parts of this procedure should be supplemented to reflect the unique nature of the ER Program as well as the changes in organization at ENG-3. The first change is to replace the Central Point Contact:

from Mr. Ralph Alarid, Chief of Surveys
(Mr. Alarid has retired from the Laboratory.)

to Mr. Larry Jones, P.E.
Phone: (505) 667-0142

Second, final survey information must also be transmitted to the Facility for Information Management, Analysis, and Display (FIMAD), since they produce the maps and assemble the data the ER Program utilizes. The contact and addresses for FIMAD are as follows:

Mailing Address

Ms. Marcia Jones
Los Alamos National Laboratory
FIMAD
Mail Stop B452
Los Alamos, NM 87545

For UPS

Ms. Marcia Jones
Los Alamos National Laboratory
FIMAD
Building SM 215, Room 259
Bikini Road
Los Alamos, NM 87545
Phone: (505) 665-2807

The third party final survey information must be submitted to is

Mailing Address

Ms. Renee Archuleta
Los Alamos National Laboratory
Environmental Restoration
Records Processing Facility
Mail Stop M707
Los Alamos, NM 87544

For UPS

Ms. Renee Archuleta
Los Alamos National Laboratory
Environmental Restoration
Records Processing Facility
Trinity Drive
Los Alamos, NM 87544
Phone: (505) 665-6498

100.3 Definition of Terms Used

This is entirely wholly applicable to land surveying under the ER Program. The following definition needs to be added:

FIMAD: Facility for Information Management Analysis and Display

100.4 Steps of Procedure in Initiating a Field Survey

- A. Central Point. This should be modified to include FIMAD. FIMAD's function is to input the survey data into a database, from which maps can be made. FIMAD is also responsible for storing and retrieving survey data related to the ER Program. In addition, all records generated for the ER Program must be sent to the Environmental Restoration Records Processing Facility (RPF).
- B. Performance of Field Surveys. Although the Laboratory Survey Manual does not explicitly require it, all land surveys executed under the ER Program should be performed under the direction of a New Mexico Registered Land Surveyor. This is prudent because of the sensitive nature of the work and the ability to locate sample locations in the future. The involvement of a professional surveyor will ensure that accurate state plane coordinates are calculated and proper field notes compiled. It is also important so that accurate results are ensured.
- C. Quality Assurance. The Laboratory Survey Manual requires a quality assurance (QA) check by ENG-3. This ER SOP recommends that all land surveys be conducted under the responsible charge of a New Mexico Registered Land Surveyor. A QA check should also be performed by a New Mexico Registered Land Surveyor. Because such a person is licensed, he is required to work to standards established by the state of New Mexico. Additionally, the surveyor is required to perform to standards established by this SOP. QA is an inherent factor in meeting these two standards. If a New Mexico Registered Land Surveyor is not utilized, the Field Project Leader must record the deviation and the justification in the Logbook or Daily Activity

Log per LANL-ER-SOP-01.04. The Field Project Leader or designee will then accept any liability resulting from not using licensed surveyor.

- D. Final Submittal. In addition to the requirements listed in the Manual, the data must also be submitted to FIMAD and the RPF. Unless the survey involves private property or boundary work, the surveys do not have to be stamped. The only cases where the survey needs to be stamped would involve projects adjacent to private property.

100.5 Survey Procedure Summary

- E. Revise QA submittal as noted above.

100.6 Survey Procedure Flow Chart

Revise per Attachment A

200 LANL Survey Standards

200.1 General

This section is wholly applicable.

200.2 Horizontal and Vertical Control

This section is wholly applicable.

200.3 Monumentation

200.3.1 Temporary Control Monuments

This section is wholly applicable

200.3.2 Permanent Survey Monuments

This section is not applicable and should not be included in the SOP for ER land surveying. The ER Program should not set permanent control markers as defined in the Manual and will not need to perform such work.

200.3.3 Benchmarks

This section is not wholly applicable, but it is a source of information.

200.4 Surveys for New and Existing Utilities, Roads and Parking Areas

This section is applicable only to the extent that ER land surveys require existing features to be located. Those parts of the section that deal specifically with

installation of new items (roads, utilities, etc.) are not applicable, since the ER Program will not be constructing these items.

200.5 Surveys for Location of Existing Underground Utilities

This section is wholly applicable.

200.6 Construction Staking

This section is not applicable. The ER Program will not be building anything.

200.7 Soil Sampling Points

This section is applicable, although it is recommended that the horizontal accuracies be within 0.1 ft and the vertical accuracy within 1.0 ft. Once the horizontal coordinates have been established, the location should be relatively easy to reestablish if the stake or marker is dislodged or washed away. Additionally, a vertical accuracy of 0.1 ft may not be useful or cost-effective in some instances.

200.8 Building Structures/New Utilities

This section is not applicable.

200.9 Survey Information Submittal

Incorporate the changes outlined above in conjunction with those listed in the manual.

300 Monumentation Standards

This part of the Manual is not applicable, since the ER Program will not be installing permanent control monuments.

400 Monument Coordinates

This section is wholly applicable to the ER Program.

Miscellaneous

The "Minimum Standards for Land Surveying in New Mexico," included in the back of the Laboratory Survey Manual are wholly applicable. (Standards updated February 2, 1994, or use latest editions.)

7.0 REFERENCES

Los Alamos Facilities Engineering Division Survey Procedures Manual, Revision 1, October 30, 1992

LANL-ER-SOP-01.04, R2, Sample Control and Field Documentation

8.0 RECORDS

The records generated by this SOP and submitted to the ER RPF will include the following:

- A. Coordinate listings (paper and digital format) in NAD 83 datum, with point descriptions, for all samples and control points surveyed.
- B. All applicable drawings (paper and digital format) generated for each survey, if required.
- C. Copies of field notes and daily logs.

9.0 ATTACHMENTS

Attachment A - Revised Survey Procedures Flow Chart

**Los Alamos National Laboratory Environmental Restoration Program
100.6 SURVEY PROCEDURE FLOW CHART**

